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Exploring the benefits of technology to government and society

A study of
Thomson Reuters Aumentum in the
City of Cape Town, South Africa

July 1, 2015

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Glossary

The background of the page is a composite image. The top half shows a cityscape with mountains in the distance under a clear sky. The bottom half is an aerial view of a busy harbor with several large ships docked at a pier, industrial buildings, and a central tower.

Output

Specific product, good, or service produced for delivery. Outputs may be defined as “what we produce or deliver.”

Outcome

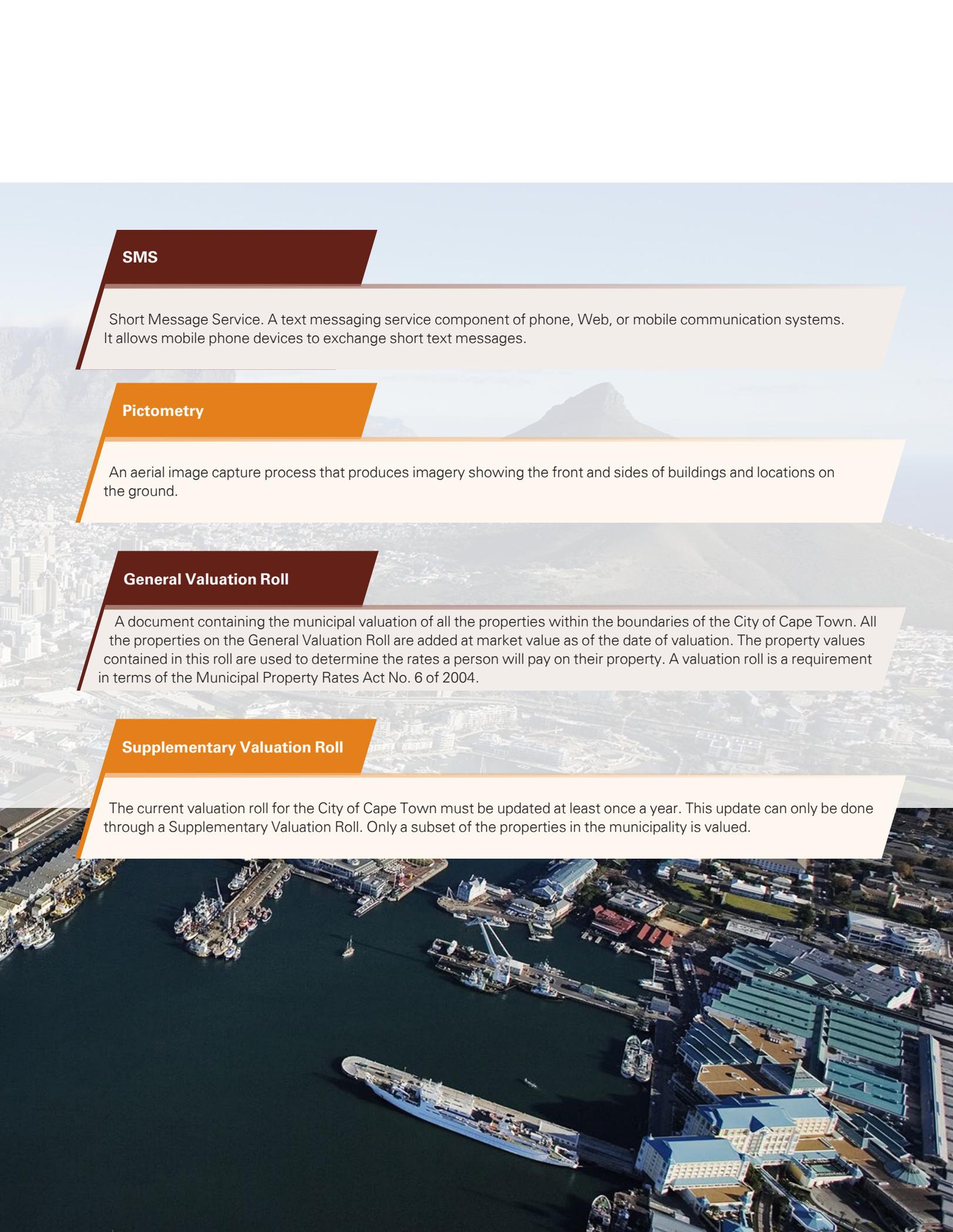
The short/medium-term results for specific beneficiaries that are the consequence of achieving specific outputs.

SPSS

Statistical Package for the Social Sciences. A software package used for statistical analysis.

SQL

Structured Query Language. A language used to request information from a database.



SMS

Short Message Service. A text messaging service component of phone, Web, or mobile communication systems. It allows mobile phone devices to exchange short text messages.

Pictometry

An aerial image capture process that produces imagery showing the front and sides of buildings and locations on the ground.

General Valuation Roll

A document containing the municipal valuation of all the properties within the boundaries of the City of Cape Town. All the properties on the General Valuation Roll are added at market value as of the date of valuation. The property values contained in this roll are used to determine the rates a person will pay on their property. A valuation roll is a requirement in terms of the Municipal Property Rates Act No. 6 of 2004.

Supplementary Valuation Roll

The current valuation roll for the City of Cape Town must be updated at least once a year. This update can only be done through a Supplementary Valuation Roll. Only a subset of the properties in the municipality is valued.



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The information contained herein is of a general nature and is not intended to address the circumstances of any particular individual or entity. Although we endeavor to provide accurate and timely information, there can be no guarantee that such information is accurate as of the date it is received or that it will continue to be accurate in the future. No one should act on such information without appropriate professional advice after a thorough examination of the particular situation.

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Executive summary



Background

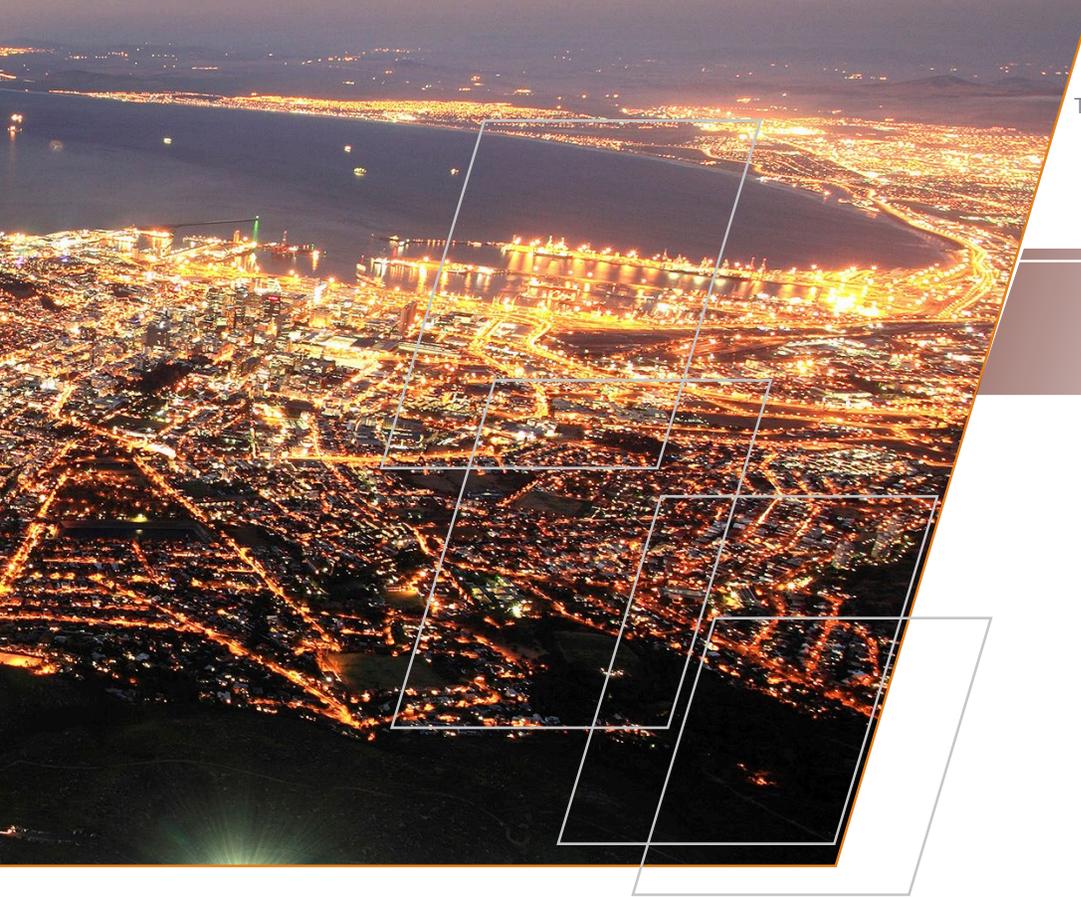
The Thomson Reuters Aumentum software suite is a global solution that addresses land administration challenges. It has supported the creation of tenure security and the protection of land rights of citizens in various countries such as Dominica, Jamaica, Nicaragua, Liberia, Nigeria, Uganda, and South Africa, specifically in the city of Cape Town. Land tenure security is fundamental to a range of development outcomes. Clear and documented land ownership improves economic growth, strengthens natural resource management, protects vulnerable groups including women and minority populations, reduces conflict over property rights, and can assist in change and disaster resilience.

Cape Town is the second largest city in South Africa and has a large and diverse portfolio of properties. The City of Cape Town (the City) Valuations Department (the Department) is responsible for valuing all commercial and residential properties in the City. In 2009, the Department implemented the valuation module of the Aumentum system.

Other vendors were not willing to adapt their systems to international markets; therefore, the draw card for the Department was that Aumentum could be customized to meet the City's requirements. Aumentum also offered features such as a workflow management tool, an audit trail, and the ability to work in multiple databases. The Department required a system that offered all these features to enable them to improve the efficiency, effectiveness, and equality of the valuation system.

KPMG LLP (U.S.) was engaged by Thomson Reuters to develop an analytical framework to measure the impact of its Aumentum installations and to undertake a pilot impact study of the use of the Aumentum Valuation module by the City. The review looked at the impacts of the system at three key levels, namely:

- The Department level, i.e., the impact on processes and efficiency
- The City level, i.e., the impact on citywide planning and administration for the municipality
- The Societal level, i.e., the ultimate impact on citizens and service users.



Impact of Aumentum

The study identifies clear linkages in how the use of the Aumentum system directly or indirectly contributed to a significant number of impacts at the Department, City, and Societal level. These linkages are often referred to in similar impact studies as the “Theory of Change” or logic framework.

The table overleaf summarizes the impact of Aumentum across each level. It illustrates the main impacts at the Department level in terms of:

- Increased productivity and efficiency
- Improved transparency and accountability
- Increased accuracy.

These Department level outputs then contribute to the corresponding outputs and outcomes at both City and Societal levels.

The report presents the impacts according to the following categories:

- Attributable impacts – impacts that result directly from the features or use of the valuation system
- Contributable impacts – impacts that result from the work of the Valuations Department and indirectly from the valuation system, including the monitoring impacts that can now be measured as a result of using the Aumentum system
- Potential impacts – impacts that could potentially be achieved or measured through further system enhancements.

This method for presenting the results of the study is the clearest way in terms of communicating the linkages across the different levels of Department, City, and Society.

Table 1: Summary of impact

 SUMMARY OF IMPACT			
 KEY FINDINGS	 DEPARTMENT LEVEL IMPACTS¹	 CITY LEVEL IMPACTS	 SOCIETAL LEVEL IMPACTS
 Increased productivity and efficiency	<ul style="list-style-type: none"> (D1) Reduced turnaround time for mass valuations (75% – from 20 days to 5 days²) (D2) Reduced resolution time for objections and appeals (from 3 months to a number of days³). As operational production has been initiated as part of proactive valuations, the Department does not need to wait for the completion of a General Valuation (GV) or Supplementary Valuation (SV) to initiate the resolution of objections. The resolution process can now be commenced immediately. (D3) The external support cost of conducting general valuations has decreased with each cycle since 2000 due to the development of local internal capacity and expertise. The external support cost for 2006 was R54 million and this has been reduced to an accepted base of R18.6 million projected for GV2015. (D4) Reduced number of full time equivalent (FTE) staff supporting general valuations from 407 in 2006 to 176 in 2015 	<p>Reduced valuations lead-time that leads to:</p> <ul style="list-style-type: none"> (C1) Revenue Department receives more frequent valuations, which helps ensure information used to calculate tax rates is up-to-date. (C2) The City is able to authenticate ownership more quickly, in order that transactions can be approved. 	<ul style="list-style-type: none"> (S1) Equity gains: Property valuation is more consistent, objective, and transparent. (S2) Increased customer satisfaction from timelier valuation and other property transactions
 Improved transparency and accountability	<ul style="list-style-type: none"> (D5) Ongoing and continuous valuation of properties (D6) Reduced historical backlog and clearer ownership/visibility of open cases through use of the workflow tool (D7) Better integration with the new data management system rolled out in the City across different departments. This has increased collaboration and coordination. In addition, the Department is no longer dependent on receiving hard copies of building plan submissions to identify properties that have had improvements or new buildings. The technology available at the Department's disposal has allowed it to proactively initiate valuations (as they are still dependent on authentication from the building plan submissions submitted by the Planning Department). 		<ul style="list-style-type: none"> (S3) Increased confidence of land rights among citizens (S4) Citizens can utilize up-to-date valuation of properties as tenure security
 Increased accuracy	<ul style="list-style-type: none"> (D8) Enhanced consistency in valuation methodology (D9) Improved data quality. Able to capture broad range of value attributes across different neighborhood types. (D10) Reduction in data errors (2012 to 2014 – 27% decrease in total number of errors) (D11) Reduced objections (46% from 2006 to 2012) and appeals (33% from 2009 to 2012) 	<ul style="list-style-type: none"> (C3) Increased accuracy of billing by Revenue Department (C4) Data used by Transport Department for bus route planning (C5) Property valuation and ownership attributes data can be used for city planning (C6) The Planning Department is also utilizing the property valuation data on a pilot project to provide an exemption on rebates to SMME's in the townships, allowing them to kick-start their businesses. 	<ul style="list-style-type: none"> (S5) Increase in the number of persons identified as indigent/low income who can benefit from rebates and access to free basic services (water, electricity, and sanitation). This serves as an incentive to citizens to value their properties. (S6) Assists the poor to administer deceased estates: proof of property values is required by the Master of the High Court before an estate is finalized.

¹ Please see report section 1.4 for "impacts" definition

² Source – Anecdotal evidence based on interview with Head: CAMA analyst and Senior CAMA analyst from the Department

³ Source – Anecdotal evidence based on interview with Manager: Valuation surveys and quality

Quantification of impact

This study is the first of its kind to attempt to identify the impact that use of the Aumentum system has had on a client's operations, its jurisdiction, and wider society. As such, data related to the potential impact measures has not been routinely collected or tracked by the Department, and baselines are difficult to establish.

However, what the study does provide is a "proof of concept" with respect to the impact of the Aumentum system at the Department, City, and Societal levels. Where possible, the impact has been quantified. Going forward, there is a clear benefit to tracking this data, identifying additional data sources (including, for example, City data and Statistics SA) in order to compute various impact metrics that will serve as key inputs to City programs and services.

Further opportunities

The results of this study demonstrate the impact of the Department's work through its use of the Aumentum Valuation system, on its internal performance, its contribution to citywide performance, and the outcomes for citizens and service users.

It is clear that significant improvements have taken place across a range of areas as a result of a combination of policy changes, clear leadership, enhanced capacity and capability, the commitment and professionalism of the Department's staff, and the features and process improvements that have been enabled and supported by the Aumentum Valuation system.

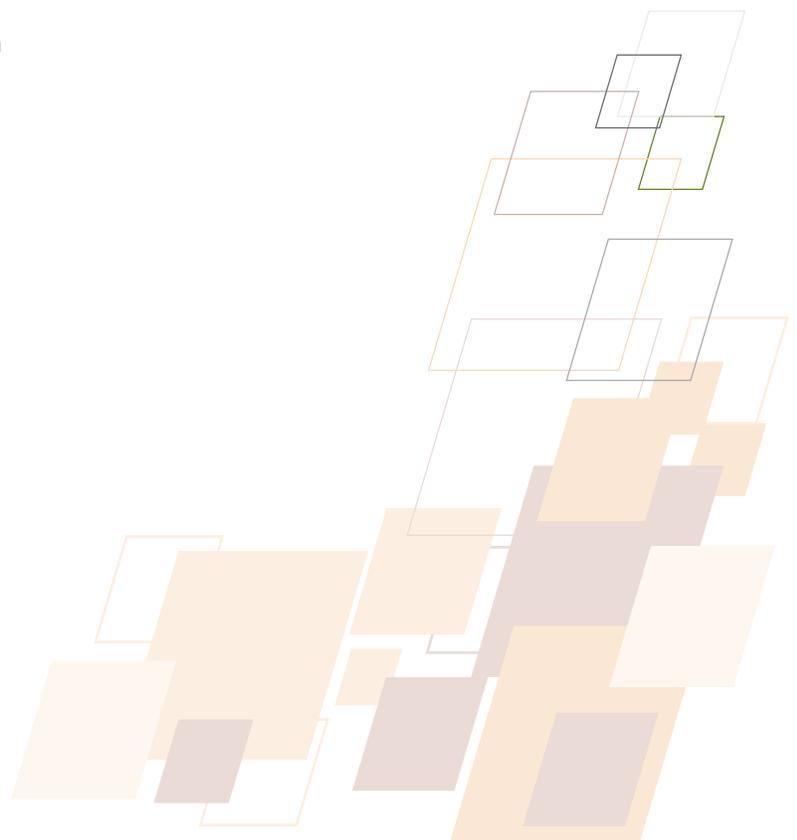
Going forward, this presents further opportunities for the Department and the City, including:

- South African cities are still grappling with the transformation from Apartheid-era cities to inclusive and transformed cities. Based on the valuation system information, the City should consider utilizing information on property owners based on demographics such as age, gender, and income levels. This will give the Department the ability to provide valuable data to assist the monitoring of the City's transformation milestones.
- Analyzing property owners and property trends based on demographics will enable the Department to observe how some areas are evolving and others are undergoing radical and rapid change. For example, are older persons moving out of particular areas and into new retirement village communities? Is foreign ownership increasing in some areas? Do women have increased access to property ownership? Analysis of data and mapping of trend patterns will support broader citywide social and economic policy and planning.

- Reporting on the social impacts of the valuation process and making the findings available to department staff will provide staff members a broader picture and highlight the importance of their contribution to the life of the city and its communities. The data can also be used to develop annual KPIs to help the Department further improve its performance.
- Property maps with clear ownership can be overlaid with service maps from public utilities, such as water, electricity, and garbage. This can be used to identify gaps in coverage and future areas of growth in order to optimize service delivery.
- Land security may also reduce the risk of incidences of violence among citizens where there is a dispute over property. Clear titles of ownership reduce the potential for squatting on land and subsequently claiming ownership.
- The system allows for more informed urban planning and development. This can help to project future property values and tax revenue that feeds into broader city-level planning.

Acknowledgements

The research team would like to thank members of the Department and other members of the staff of the City of Cape Town who generously provided insights, information, and analysis to support the study.



1 Introduction and background



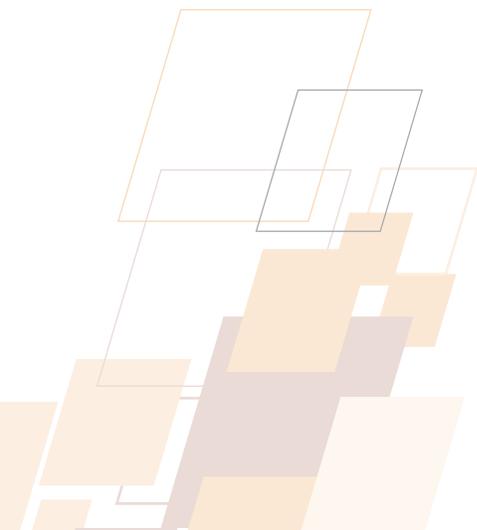
1.1 Thomson Reuters Aumentum

The Aumentum software suite is a global solution that addresses land and property administration challenges. It has supported the creation of tenure security and the protection of land rights of citizens in various countries such as Dominica, Jamaica, Nicaragua, Liberia, Nigeria, South Africa, and Uganda.

The Aumentum system is a software solution that integrates key government functions across various departments. Aumentum comprises the following modules: Aumentum Cadastre, Registry, Recorder, Valuation, Tax, and e-Government. The Aumentum suite of software allows the flexibility of implementing one or all of the modules to meet the particular needs of the client. The modules can also be customized to reflect national and process issues.

The City of Cape Town (the City) has implemented the Aumentum Valuation module. The Valuations Department (the Department) utilizes the following features:

- Records management – provides a single data entry source that leads to increased data accuracy. All the data is in one central location.
- Workflow tools – provides staff with the means to view task lists within the system and allows managers to track the allocation of tasks and productivity.
- Pictometry integration – allows staff to easily access oblique and orthogonal images to measure area, perimeter, and height of any structure.⁴
- Reporting – the system has standardized reports and the Valuations Department can generate customized reports for other departments.
- Audit trail – allows the Department to review the editing history of any particular user or a group of users.





1.2 Background and history of Cape Town

Since 1994, the City of Cape Town has experienced many political and administrative changes. In 1996, the first democratic local government elections were held. Cape Town was divided into six municipalities and an additional metropolitan council. In 1999, the Unicity Commission was established to oversee the merging of seven municipal councils to a single unicity, namely the City of Cape Town. The City had to transition from various tax regimes and valuation methodologies to a single unified method of governance.

The City has a large and very diverse portfolio of properties, ranging from very affluent areas such as Clifton and Hout Bay on the Atlantic seaboard to more deprived areas such as the Cape Flats and Khayelitsha. In recent years, the City's property prices have seen a period of significant fluctuation as a result of the global financial crisis. The FNB House Price Index peaked around December 2007, bottomed in May 2009, and returned to the previous high in December 2011. While sales volumes are still below their peak levels, capital growth has become increasingly location-driven with Cape Town having some of the best locations in the country. Cape Town has typically seen stronger price growth than

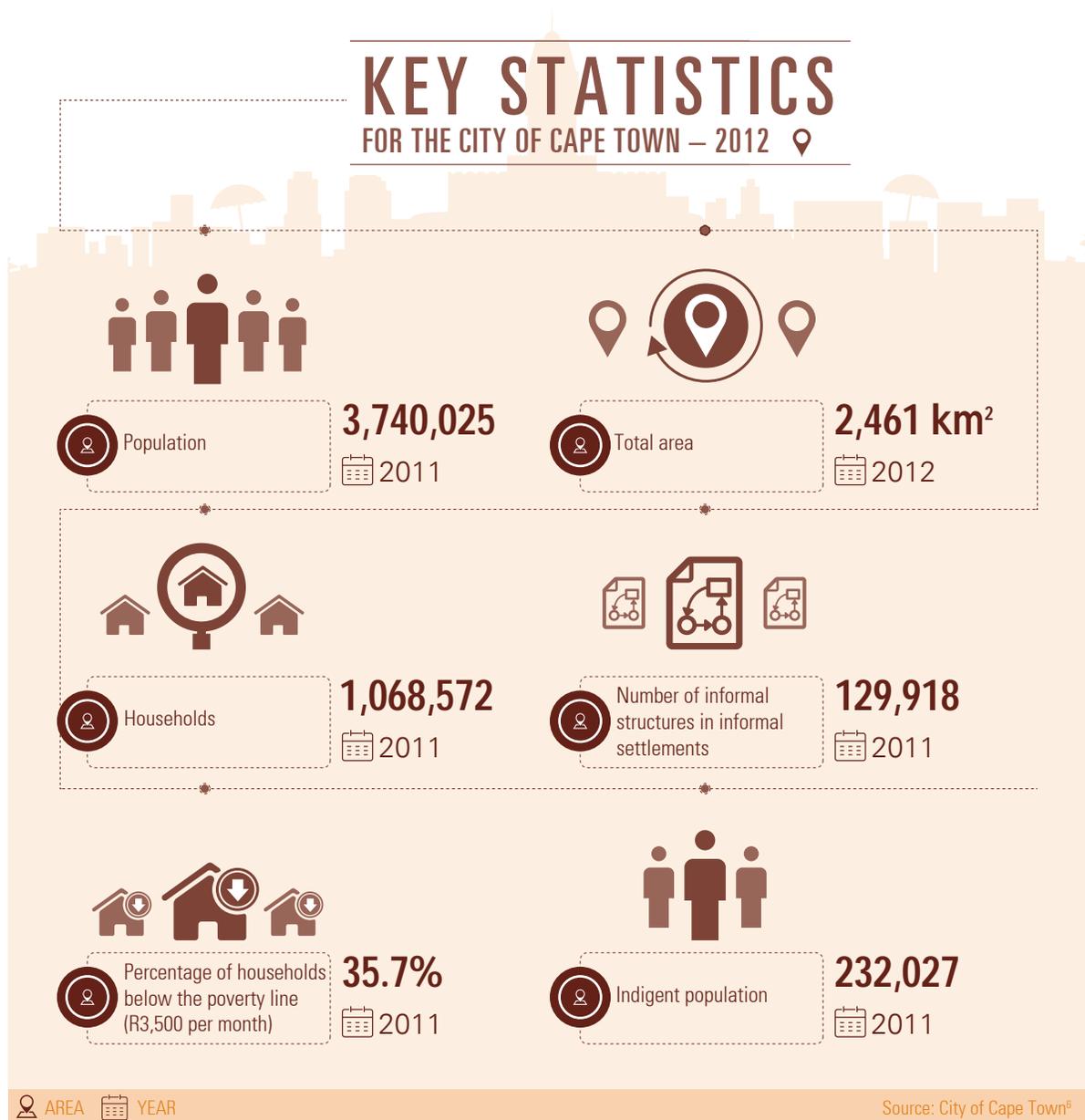
Johannesburg, Pretoria, and Durban, with the Cape Town suburb of Avalon Estate having achieved the highest growth of all national suburbs over five years with a 410 percent capital gain.⁵

During the past decade, the City has embraced a new set of valuation statutes that was better able to cope with a diverse property portfolio. The City also updated its technology and processes, including implementation of the Aumentum Valuation module.

After a competitive procurement process, which considered the technical and commercial requirements of the City, the Department chose Aumentum because the valuation module offered key features that would enable the Department to meet the specific requirements of the City to improve efficiency, effectiveness, equity, and transparency. The key features included a workflow tool, easier integration of the SPSS modeling tool, and multiple databases that could be supported by Aumentum.

⁴ Pictometry is still being fully integrated at the time of this report

⁵ Financial Mail, May 7–13, 2015, "Would you pay R160m for this Clifton view? Ranking South Africa's top suburbs"



1.3 About the Valuations Department

The Department is responsible for valuing the commercial and residential properties within the City of Cape Town's jurisdiction. The Department is structured in four functional areas, namely:

- Valuations operations
- Valuations survey and quality
- Valuations data and business systems
- Valuations business environment.

Properties are valued so that the City can levy property rates. The Municipal Property Rates Act No. 6 of 2004 regulates the power of a municipality to impose rates on properties, makes provision for fair and equitable valuation methods, and aims to ensure that municipalities implement a transparent and fair system.

Field teams from the Department inspect properties and collect property attributes on data collection forms. Property attributes for residential properties include number of bedrooms, overall quality of the property, the type of view, address, etc.

⁶ KPMG was not requested to validate this data as part of the project's scope of work.

Commercial properties attributes include location, proximity to infrastructure and markets, etc. Property attributes are captured in Aumentum and data modeling is undertaken based on property attributes to generate a valuation.

Property values are logged on the valuation roll, which is published publicly. After the valuation roll is made public, citizens of Cape Town may object to the published values. An objection form is completed and submitted electronically via e-mail or manually at various locations across the City.

1.4 About the study

This study was performed by personnel associated with KPMG LLP (U.S.) and KPMG in South Africa.⁷

Value of an impact study

Carrying out an impact study is useful for a number of practical reasons, including:

- Ability to measure the effectiveness, relevance, and efficiency of the Aumentum system
- Enhance the Department’s understanding of the system and how it contributes to improving land tenure security
- Refine future interventions that rely on/provide input to the system
- Knowledge sharing among the City’s government departments for more efficient citywide planning.

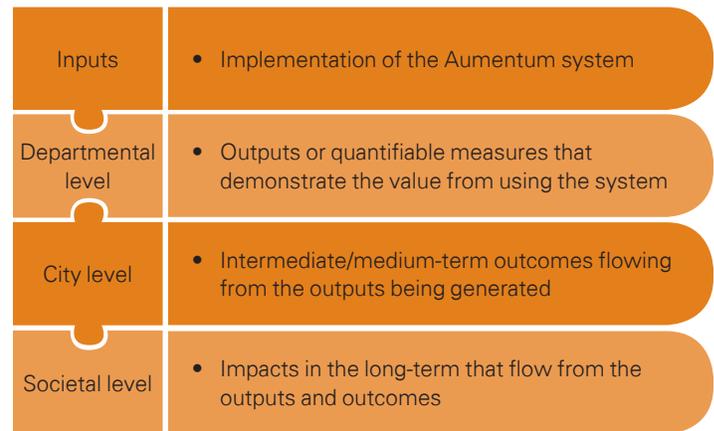
The study looked at the impacts at three key levels, namely the Departmental level, the City (municipality) level, and the Societal level. The study categorizes the impacts according to the following factors:

- What impact is achieved as a direct result of the City’s use of the Aumentum Valuation module? (attributable impact)
- What impact is achieved as a result of the City’s Valuation services, indirectly the Aumentum Valuation module, and what impacts can now be measured and monitored as a result of the Aumentum system? (contributing impact)
- What enhancements could be made to the Aumentum system and/or reporting to improve the effectiveness of the system and/or help the City better measure impact? (potential impact)

The objections are then assessed and the property value will either remain unchanged, or increase or decrease based on merit of the objections.

Where an objection is not successful, the property owner can appeal to the Valuation Appeal Board. The members of the board are appointed by the Western Cape Government and are independent of the City. The board must review all submitted appeals. It can then confirm, amend, or revoke the decision of the municipal valuation.

Figure 1: “Theory of Change”



An impact study using the “Theory of Change” approach can be defined as the process of assessing the consequences/impacts that are likely to flow from a specific course of action—in this case, the implementation of Aumentum. The focus is on the impacts that alter the manner in which people live, work, and relate to one another.

In order to showcase the above Theory of Change in a clear and concise manner, the outputs (Department level), outcomes (City level), and impacts (Societal level) have all been termed as **impacts** at all three levels for the purposes of this review.

⁷ KPMG LLP, a U.S. limited liability partnership and a member firm of the KPMG network of independent member firms affiliated with KPMG International, a Swiss cooperative, and KPMG in South Africa, which is a member firm affiliated with KPMG International located in South Africa. All references in this report to “KPMG” are to KPMG LLP and/or KPMG in South Africa, as the context requires.

1.4.1 Methodology

KPMG's approach included:

- Develop Theory of Change. Identify areas to examine in research concerning the attributable and contributory impacts. Identify quantities and qualitative data sources.
- Research global literature for examples of the impact achieved in other land valuation programs. Key literature that informed the methodology for this assessment included:
 - “Land policies for growth and poverty reduction,” A World Bank policy research report
 - “Evaluating impact of urban land titling: results and implications,” preliminary findings by Alain Durand-Lasserve
 - “The informal housing crisis in Cape Town and South Africa,” Honors research thesis by Scott Mattheson
 - “The economic and fiscal costs of inefficient land use patterns in South Africa,” Financial and Fiscal Commission
 - “The right to the City: Institutional imperatives of a developmental state,” Susan Parnell and Edgar Pieterse, University of Cape Town
- Review the City's documents for existing data, e.g., annual reports for the 2004/05–2013/14 financial years, the Municipal Property Rates Act No. 6 of 2004, the state of Cape Town in 2014, and statistics for the City of Cape Town in 2012.
- Review press coverage of land management issues in the City.
- Identify key stakeholders in the Department and the City for interview.
- Interview the City's representatives on potential social impacts and outcomes, and available data to measure the change. All units within the Department utilize the Aumentum system for various purposes. The following representatives from the City were interviewed:
 - Director: City valuations
 - Manager: Valuation operations
 - Manager: Valuation surveys and quality
 - Manager: Valuation data and systems
 - Head: Quality assurance
 - Head: CAMA analyst
 - Senior CAMA analyst
- Conduct a “walk-through” of the Aumentum module and data collection/analysis capabilities.
- Provide specific requests for Aumentum system data and reports to enable quantification of potential impacts – KPMG did not directly access the system.
- Develop a report on the impact of land valuation services and recommendations to improve the effectiveness and impact of the Aumentum system module.

1.4.2 Limitations of this report

This report provides the results of a high-level study on the impact of the Aumentum Valuation module on the work and outcomes of the City and the Department.

KPMG has relied on information and analysis provided by City officials. KPMG has not performed an audit over the Department's data, information, or processes. We have attempted to include all information relevant to the review. However, it is possible that documents and information exist which were not made available to us, or to which we did not have access. This is the first study or analysis to consider the impact of Aumentum to the City of Cape Town, and the analysis is limited by lack of baseline data or consistent tracking of data for this purpose since the module was implemented. However, we have used our best efforts to present a clear picture based on the available data.



2 Impact study



The following sections describe the various impacts for the Department, City, and society as a result of using the Aumentum system for valuation services. The section categorizes the impact primarily according to the type of impact (attributable, contributing, or potential impacts) in order to clearly show the linkages that arise from the Departmental level, to the City and to society levels. Appendix 1 provides a summary of the impacts categorized by the level (Departmental, City, and Societal).

2.1 Attributable (direct) impacts

Attributable, or direct, impacts are those that are achieved directly as a result of the City's use of the Aumentum Valuation module.

2.1.1 Departmental level

At the Departmental level, using Aumentum has resulted in increased efficiency, transparency, and impact.

One of the major efficiency gains experienced by the Department is time savings. Mass valuations are undertaken more quickly because of the workflow feature, and SQL and SPSS integration with Aumentum (D1).

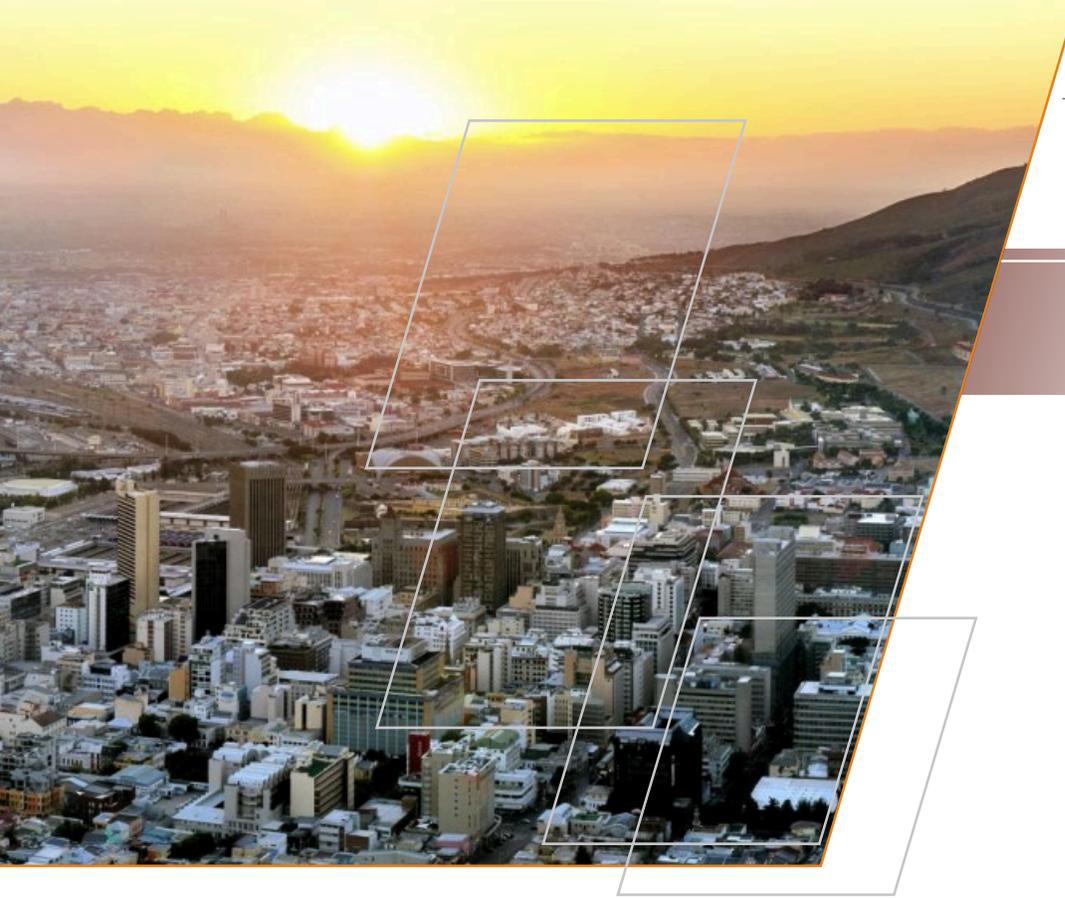
The workflow tool allows Department staff to track the age of the properties in the queue and identify the length of time the property has been in the workflow and the assigned staff member. SPSS and SQL are easier to use and, as a

result, the quality of data used for valuations has improved. The Department is able to address historical backlogs and resolve outstanding issues, while simultaneously valuing properties entering the workflow on a day-to-day basis to prevent future backlogs.

The Department also utilizes Pictometry as a data collection tool. The Department is now proactive in its data collection efforts and this has lessened the reliance on other departments (D7). For example, the Department is no longer relying on building plan submissions from the Planning Department to identify properties that have had improvements or new buildings.

Aumentum has enabled the Department staff to be less reliant on consultants to generate a valuation roll. The workflow feature enables segregation of duties, transparency, and isolation of responsibility, and reduces the overall risk in the valuation process. The Department has generated clear role and responsibility statements for staff with clear delineation of duties. Project time lines for valuations are in place, understood and effectively implemented by the Department's staff.

The Department is able to resolve valuation objections more quickly (D2). Previously, objections would typically take three months but with the current electronic process, objections can potentially be resolved in a number of days. Objections that relate to correcting the name of the owner or an address are resolved immediately.



The main efficiency gains experienced by the Department are:

- The turnaround time for the mass appraisal modeling process for property valuations has improved by 75 percent from about 20 days to 5 days (D1).
- The Department has experienced an improvement in the data quality and accuracy of valuations. There has been a 27 percent reduction in the total number of data errors identified by the Quality Control Department between 2012 and 2014 (D10).
- The number of objections and appeals from citizens on the properties assessed has also decreased (D11). The number of objections to valuations has been reduced by 46 percent since 2006. While much of the gain was realized at the time of system implementation, it is interesting to note that improvements continue to be made. The number of objections decreased by 8 percent between 2009 and 2012 and the number of appeals decreased by 33 percent during the same time period.

The external support cost of conducting general valuations has decreased with each cycle since 2000 due to the development of local internal capacity and expertise. The external support cost for 2006 was R54 million and this has been reduced to an accepted base of R18.6 million projected for GV2015 (D3).

- The number of full time equivalent (FTE) staff supporting general valuations has decreased from 407 in 2006 to 176 in 2015 (D4).

2.1.2 City level

The Department has added a significant number of properties to its valuation roll (D5). The 2006 general valuation roll was comprised of 736,580 properties. In 2009, the number of properties increased to 785,919. A total of 49,339 properties were added to the valuation roll. An additional 17,328 properties were captured in Aumentum between the 2009 and 2012 general valuations and a further 111,901 properties were added between 2012 to 2014 (total 915,148).

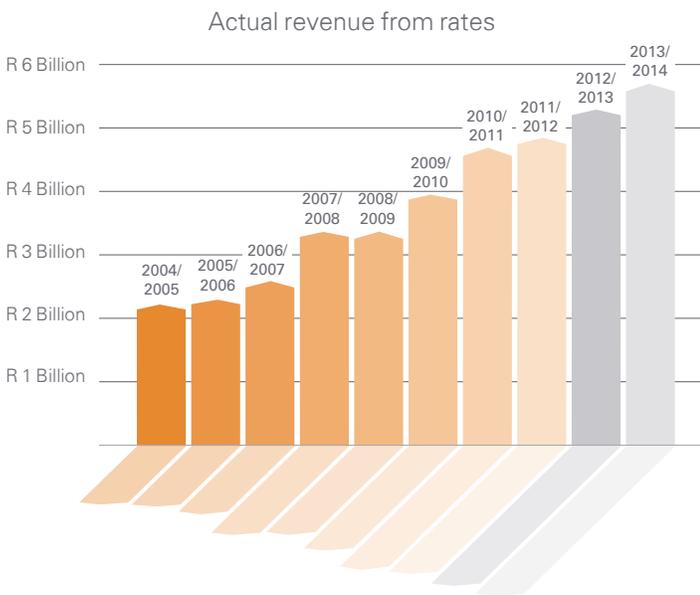
While some of these increases will reflect the natural growth of the city (i.e., new properties being built), a portion of the increase in properties valued can be attributed to the increase in productivity in the Department. As a result, the City has a better understanding of the extent of its property base and is able to track the changing neighborhoods.

Between 2010 and 2014, there has been a 31 percent increase in tax revenues collected (C1). It is important to note that some of this increase is nominal growth, resulting from tax rate increases in line with inflation. However, some of this growth is attributable to the increased number of properties on the valuation roll. Comparing revenue in 2008–2009 of R3,237,649 with 2013–2014 of R5,542,203 revenue has increased by R2,304,554 (71 percent).

Not only have more properties been valued, this has been done on a more timely basis, and between the general valuations, allowing for more accurate and timely billing and collection efforts by the City's Revenue Department (C3). The figure

below illustrates the increase in revenue for a 10-year period from 2004 to 2014.

Figure 2: Tax revenue from property rates



Source: KPMG analysis of City of Cape Town: Integrated Annual Report and financial statements 2004–2013

Valuation data is also being utilized by other departments in the City. The Transport Department is using the data for bus route planning, which enables the City to better meet changing demand, as residential areas grow and decline, and new places of employment are created.

2.1.3 Societal level

We have examined a number of areas where the ripple effect of the valuation process can be seen to impact broader society. We have noted that accurate and timely property valuations can have some interesting and positive impacts on low-income persons and communities. The level of accuracy and timeliness of the property valuation data means that other City departments make use of the data for evaluation of eligibility for property tax rebates and identify potential eligibility for free basic services, including electricity, water, and sanitation (S5).

The number of indigent households in Cape Town increased from 250,000 in 2003 to 288,703 in 2013. These are ratepayers who own a single home and qualify for a 100 percent rates rebate when they register as indigent. To qualify, a household either has to be headed by a minor and be registered in the name of a deceased parent/parents, or a household must have a monthly income below a certain threshold.⁸

It has been clear for many years that individuals from low-income groups have found it more difficult than wealthier citizens to gain access to financial resources. Governments, development agencies, and citizens groups have been pressing for financial inclusion for the poor and disadvantaged. We have identified that the valuation data produced by the City of Cape Town is starting to have an impact in this area. When the properties of low-income persons are included on the valuation roll, these persons have tenure security and peace of mind because they know that the land they reside on is legally recognized by the municipality (S3). Low-income persons also have increased access to finance as they are able to use their property valuation and documentation as security on loans.

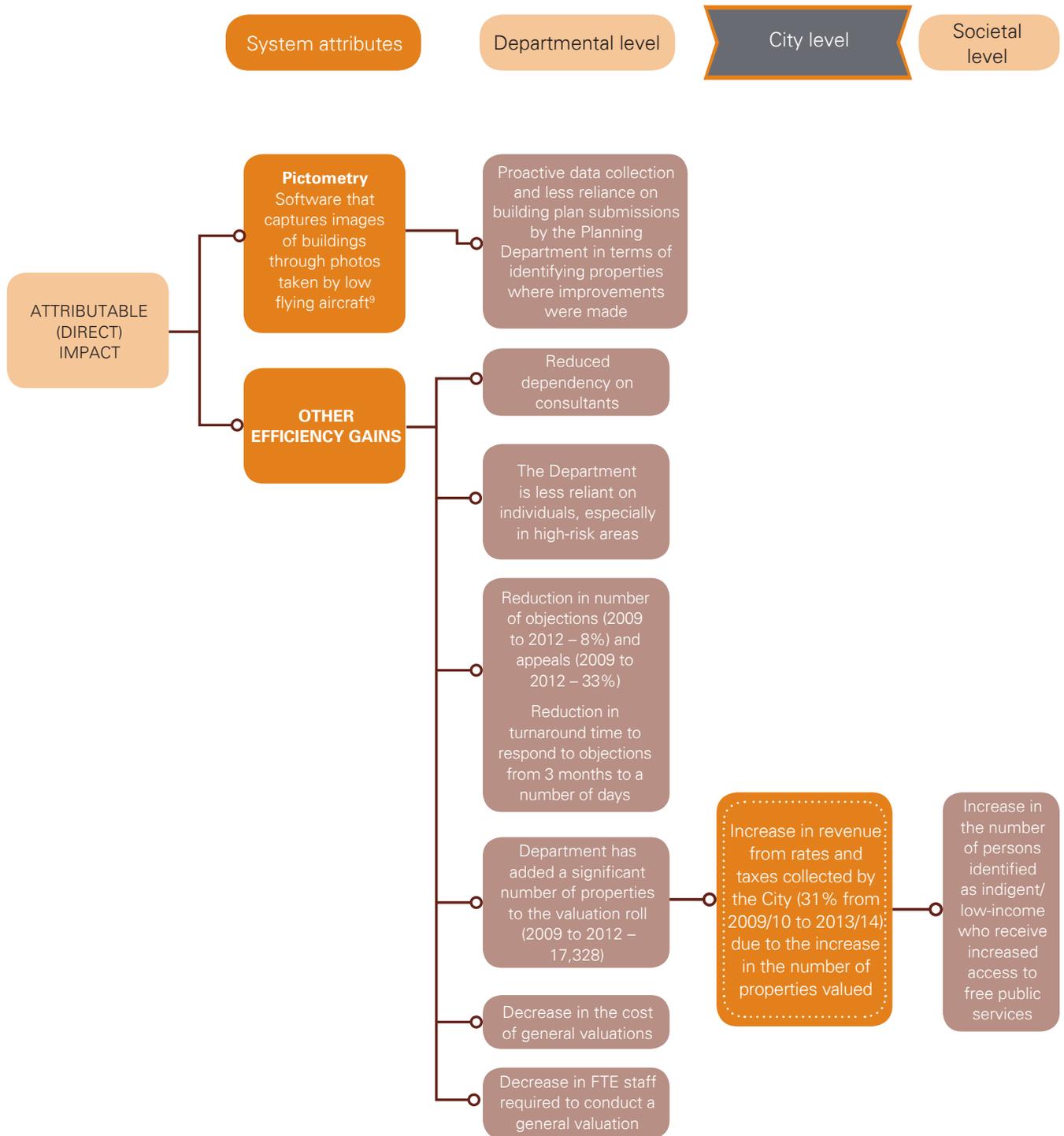
By raising awareness and understanding of property rights, even those citizens with little political or economic power now have the ability to claim, defend, and enforce their land rights. The increase in volume, accuracy, and timeliness of valuation, supported by the Aumentum system, means that a number of low-income persons will have been able to realize the above benefits since 2009.

⁸ In 2014, this threshold was a monthly income below R5,000.

Figure 3a: Summary of attributable (direct) impact of using Aumentum



Figure 3b: Summary of attributable (direct) impact of using Aumentum (continued)



2.2 Contributing impacts

Contributing impacts are those that are achieved as a result of the Department's services and processes, as a result of the contribution of the Aumentum Valuation module to the overall land management process. We have also included a number of impacts that can now be *measured* as a result of using the Aumentum system, even if the impacts are not a result of *using* the system.

2.2.1 Departmental level

The Aumentum Valuation module is flexible and able to value properties with a broad range of attributes, including the many characteristics of the neighborhood in which the property is located (D9). For example, the Department is able to model the effect of gang violence in Delft or the features of affluent areas like Hout Bay to gather more accurate estimates on property values.

Communication with citizens concerning objections to property valuations has improved. The Department has integrated SMS technology with the Aumentum Valuation module to deal with objections to property valuations. When a citizen objects to their property valuation, the citizen receives an SMS notification acknowledging receipt of their objections. This process helps ensure that the citizens are aware that their objection has been received and is being considered. Once the objection has been considered and investigated, the citizen is then notified of the status of their objection (D11).

The Department has mapped its business processes and methodologies, and as a result, valuations are done more efficiently and in a consistent manner. The data collection forms have been standardized, which has made it easier to capture property attributes, reducing subjectivity in the valuations process (D8).

The workflow feature has enabled the Department to track how much it costs to perform a single valuation over three financial years and the production volume (the amount of valuations performed). These KPIs help the Department to manage and improve its productivity and efficiency (D4).

2.2.2 City level

The City, through its Revenue Department and Planning Department, registers properties in the name of the owner as it appears on the valuation roll. The City's ability to track property ownership has improved. When an individual sells her or his home, they must settle all outstanding municipal debts in order to obtain a rates clearance certificate. An accurate valuation roll has streamlined this process and made it quicker for buyers and sellers of property to conclude transactions. The City is able to authenticate ownership more quickly, in order that transactions can be approved (C2).

An accurate valuation roll has allowed the City to track property ownership, which allows the City to know its entire property base – how much land, where it is located, and how much it is worth. This contributes to citywide economic and social planning and policy development (C2).

According to the City's spatial development framework, the spatial extent of the City has increased rapidly by an estimated 650 hectares per annum. The biggest component of current and past growth in Cape Town has been residential development, predominantly on the periphery of the City. The majority of low-income households live far away from the city center and have to commute long distances and lengthy time period (60–90 minutes). As a result, the City developed the integrated public transport plan that includes the provision for rail, bus rapid transit services, as well as road-based public transport improvements.¹⁰

2.2.3 Societal level

Aumentum facilitates the formalization of the informal property market in the City of Cape Town. Properties in the former "Local Black Authorities" during the Apartheid era were not always valued and the citizens did not know the true values of their properties. The Department is now valuing these properties in areas such as Khayelitsha, facilitating property transactions in the area. Citizens in these areas are now able to sell their properties at market values (S4).

The City has experienced large outstanding debts resulting from persons not paying their water bills due to disputes on the amounts charged. The Revenue Department now utilizes the valuation roll to identify properties valued at R300,000 or less and repairs water leaks on those properties free of charge. Thus, the City has improved its water conservation efforts as well as resolving disputes. The City then installed water management devices free of charge on those properties, which enables citizens to track and manage their water usage (S5).

An accurate valuation roll and tracking of property ownership provides increased confidence of citizens in their property rights. When a property appears on a public record such as a valuation roll, it validates those property rights (S3).

The City of Cape Town Revenue Department does not levy rates and taxes on properties valued at R200,000 or less, provided that the individual owns only one property. For properties that cost more than R200,000, the first R200,000 is exempt from the levying of rates and taxes. The correct and timely valuation of properties, supported by Aumentum, therefore contributes to the progressive and fairer tax system for the City by enabling the targeting of rebates and exemptions of the poor and disadvantaged (S5).

⁹ Pictometry is still being fully integrated at the time of this report

¹⁰ The state of Cape Town 2014 report

Figure 4: Contributing impacts of using Aumentum



2.3 Potential impacts

Potential impacts are those which could result from either enhancements to the Aumentum system and/or valuation reporting to improve the effectiveness of the system and/or help the City better measure impact.

Overall, the data that is and/or can be collected in Aumentum has significant potential value to the Department, City, and citizens of Cape Town.

2.3.1 Departmental level

The reporting capabilities of the Aumentum Valuation module are currently underutilized. The Department can potentially generate a wide range of reports that are both standardized and customized to a specific request. The Department should consider capturing the socioeconomic attributes of property owners, e.g., gender, income levels. This will allow the Department and the City to directly link property owners to demographic characteristics, which can assist in planning and delivery of public services and policies (D6).

2.3.2 City level

One of Cape Town’s biggest growth challenges is the increase in informal settlements and the escalating number of households living in backyard structures. The emerging human settlement pattern suggests that Cape Town’s population of poor households are increasing and that proportionally more households depend on public housing delivery.¹¹

The Aumentum Valuation module allows the City to keep track of their property portfolio that also includes vacant land. This

tracking of vacant land owned by the City may improve the City’s ability to plan for the construction of low-cost housing for indigent persons, as well as other benefits such as planning future commercial zones that generate tax revenues, helping to reduce overcrowding, and otherwise supporting “green” or sustainability goals. The City may use Pictometry to regularly take aerial photographs of neighborhoods, this will allow the City to track the growth of neighborhoods and anticipate the need for infrastructure such as new schools and hospitals. This information can be used by the City’s Planning Department (C4 and C5).

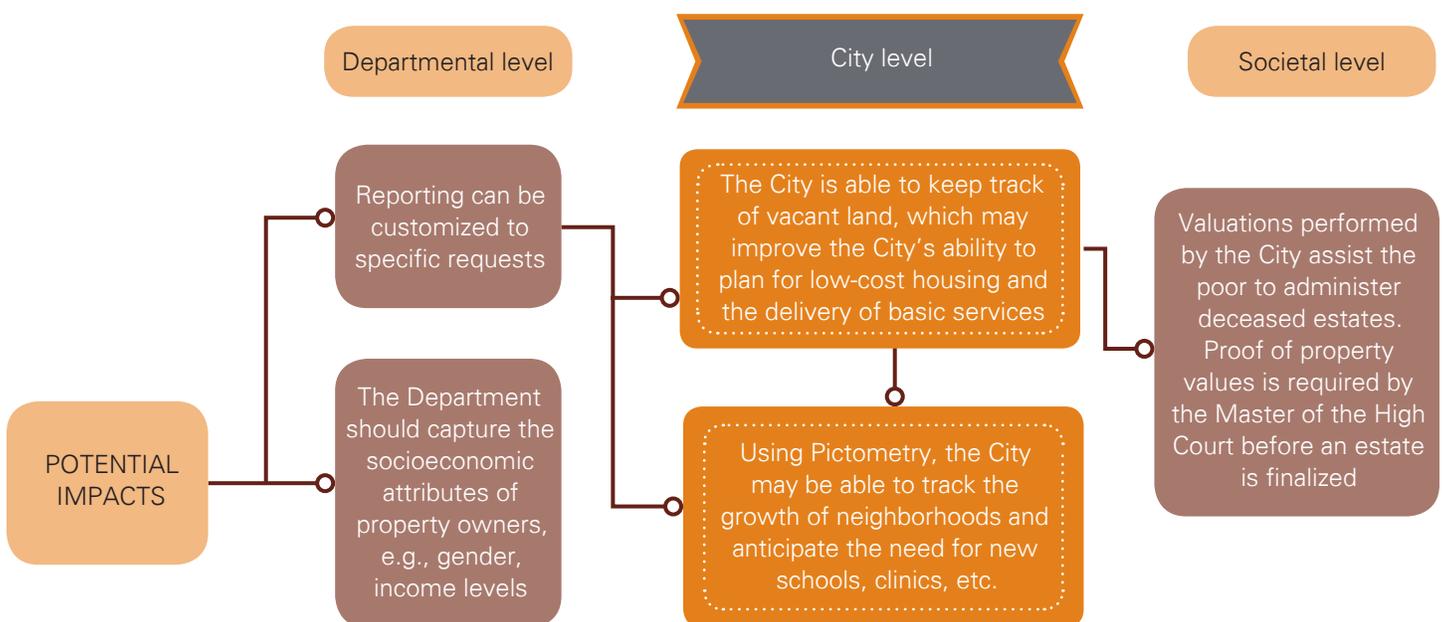
2.3.3 Societal level

Valuations performed by the City assist the poor to administer deceased estates. Proof of property values is required by the Master of the High Court before the administration of an estate can be finalized (S6).

Tracking the growth of neighborhoods along demographic lines may also improve service delivery to older persons. For neighborhoods where retirement villages are being built, services such as social assistance pay points and mobile clinics may be established.

Property ownership data can allow the city to identify if particular individuals/entities have concentrated pockets of land ownership in particular parts of the city. This can be overlaid with data from other government departments to determine if these property owners are engaging in activities that could have a negative impact on business competition (S1).

Figure 5: Potential impacts related to using Aumentum



¹¹ The State of Cape Town 2014 report

3 Further opportunities



The results of this study demonstrate the impact of the Department's work through its use of the Aumentum system on its internal performance, its contribution to citywide performance, and the outcomes for citizens and service users.

Going forward, this presents further opportunities for the Department and the City, such as:

- There is potential to integrate the Aumentum technology with handheld devices being used by field work staff performing the valuations. This will increase efficiencies to the Department even further.
- South African cities are still grappling with the transformation from Apartheid-era cities to inclusive and transformed cities. Based on the valuation system information, the City should consider analyzing property ownership data based on demographics such as age, gender, and income levels. This will give the Department the ability to report on the City's transformation milestones.
- Analyzing property ownership based on demographics will enable the Department to observe how some areas are changing as compared to others. For example, are older persons moving out of particular areas and into new retirement village communities? Is foreign ownership increasing in some areas? Do women have increased access to property ownership? This will support broader citywide social and economic policy and planning.
- The Department could consider working more closely with the mayor's office, which routinely uses City data sources to observe demographic trends, inform policy development and programs, and influence change in the City. The mayor's office will be able to use Aumentum data for wider purposes.
- Reporting on the social impacts of the valuation process and making the findings available to department staff may give staff members a broader picture and highlight the importance of their daily work. The data can also be used to develop annual KPIs to help the Department move from strength to strength.
- Property maps with clear ownership can be overlaid with service maps from public utilities, such as water, electricity, and garbage. This can be used to identify gaps in coverage and future areas of growth in order to optimize service delivery.
- Land security may also reduce the incidence of violence among citizens where there is a dispute over property. Clear titles of ownership reduces the potential for squatting on land and subsequently claiming ownership.
- Timely and accurate valuation data enables more informed urban planning and development. This can help to project future property values and tax revenue, which feeds into broader city-level planning.



Appendix 1

Summary of impacts at each level

This section summarizes the impacts at each level (departmental, city, and societal levels). This is aimed to provide a snapshot of the impacts experienced at each level.

	Attributable (direct) impacts	Contributing (indirect) impacts	Potential impacts
The Valuations Department	<ul style="list-style-type: none"> • Workflow allows for flexibility, prioritization and accountability among staff. • Age analysis – tracks progress of properties being valued in the queue. • Reporting – enabled continuous reporting on the progress of valuations. • SPSS easily integrates with Aumentum for faster modeling and more accurate valuations. • SQL easier to use on Aumentum. Allows for queries to be run without IT’s assistance leading to improved turnaround time. • Using Pictometry for proactive data collection and less reliant on building plan submission by the Planning Department in terms of identifying properties where improvements were made. • Reduction in number of objections. Reduction in turnaround time to respond to objections from three months to a number of days. 	<ul style="list-style-type: none"> • SMS technology integrates with Aumentum. Department notifies citizens of the status of their objections. • Improved efficiency of business processes. All processes have been mapped. • Reduced subjectivity and increased consistency in performing valuations leading to increased accuracy. • The workflow feature has cultivated a culture of quality assurance. • Tracking of production volume, and production times of the Department’s staff. 	<ul style="list-style-type: none"> • Reporting can be customized to specific requests. • The Department should capture the socioeconomic attributes of property owners, e.g., gender, income levels.

	Attributable (direct) impacts	Contributing (indirect) impacts	Potential impacts
The City of Cape Town	<ul style="list-style-type: none"> • Allows for the properties to be valued faster, which the City can now access more quickly, particularly the Revenue Department, which can use this data to tax properties. • Valuations data used for bus route planning by Transport Department. • Accurate valuation leads to increased accuracy of billing and revenue collection. • Increase in revenue from rates and taxes collected by the City due to the increase in the number of properties valued. 	<ul style="list-style-type: none"> • The City, across its departments, registers properties in the name of owners as it appears on the valuation roll. • The City uses the final valuation roll after objections to identify indigent persons. • Allows the City to know its entire property base – how much land, where it is located, and how much it is worth. 	<ul style="list-style-type: none"> • The City is able to keep track of vacant land, which may improve the City's ability to plan for low-cost housing and the delivery of basic services. • Using Pictometry, the City may be able to track the growth of neighborhoods and anticipate the need for new schools, clinics, etc.
Society	<ul style="list-style-type: none"> • Low-income households can use up-to-date valuation of their properties as tenure security. • Low-income earners have access to lines of credit. • Equitable valuations – the poor and rich no longer pay the same property rates. • Indigent persons are able to benefit from rebates and access to free basic services. • Increase in the number of persons identified as indigent persons/low-income who receive access to free basic services. 	<ul style="list-style-type: none"> • For properties valued at R300,000 or less, the City fixes water leaks on the property for free. • Fixing water leaks has the positive environmental impact of saving water. • The City has written off outstanding water debt for indigent persons. • The City has installed water management devices for indigent persons and low-income earners to help them track their water usage. • Accurate valuation roll has allowed the City to track property ownership. Increased confidence of land rights among citizens. 	<ul style="list-style-type: none"> • Valuations performed by the City assist the poor to administer deceased estates. Proof of property values is required by the Master of the High Court before an estate is finalized.

Appendix 2

Metadata table

	Impact	Source
D1	Reduced turnaround time for mass valuations	Interviews with City officials
D2	Reduced resolution time for objections and appeals	Aumentum system data
D3	Reduced cost of conducting general valuations	Provided by Thomson Reuters
D4	Reduced number of full time equivalent (FTE) staff supporting general valuations	Provided by Thomson Reuters
D5	Ongoing and continuous valuation of properties	Interviews with City officials
D6	Reduced historical backlog and clearer ownership/visibility of open cases	Aumentum system data
D7	Reduced reliance on other departments	Interviews with City officials
D8	Enhanced consistency in the valuation methodology	Aumentum system data
D9	Improved data quality	Interviews with City officials
D10	Reduction in data errors	KPMG analysis
D11	Reduced objections and appeals	KPMG analysis
C1	Revenue Department receives more frequent valuations which helps ensure information used to calculate tax rates is up-to-date	City of Cape Town Annual Reports
C2	The City is able to authenticate ownership more quickly, in order that transactions can be approved	Interviews with City officials
C3	Accurate billing by the Revenue Department	Aumentum system data
C4	Data used by the Transport Department for bus route planning	City of Cape Town Annual Reports
C5	Property valuation and ownership attributes data can be used for city planning	Interviews with City officials
C6	The Planning Department is also utilizing the property valuation data on a pilot project to provide an exemption on rebates to SMMEs in the townships, allowing them to kick-start their businesses	Interviews with City officials
S1	Equity gains: property valuation is more consistent, objective, and transparent	Interviews with City officials
S2	Increased customer satisfaction from timelier valuation and other property transactions	Interviews with City officials
S3	Increased confidence of land rights among citizens	Interviews with City officials
S4	Citizens can utilize up-to-date valuation of properties as tenure security	Interviews with City officials
S5	Increase in the number of persons identified as indigent	“State of Cape Town” annual address
S6	Assist the poor to administer deceased estates, proof of property values is required by Master of the High Court	Interviews with City officials



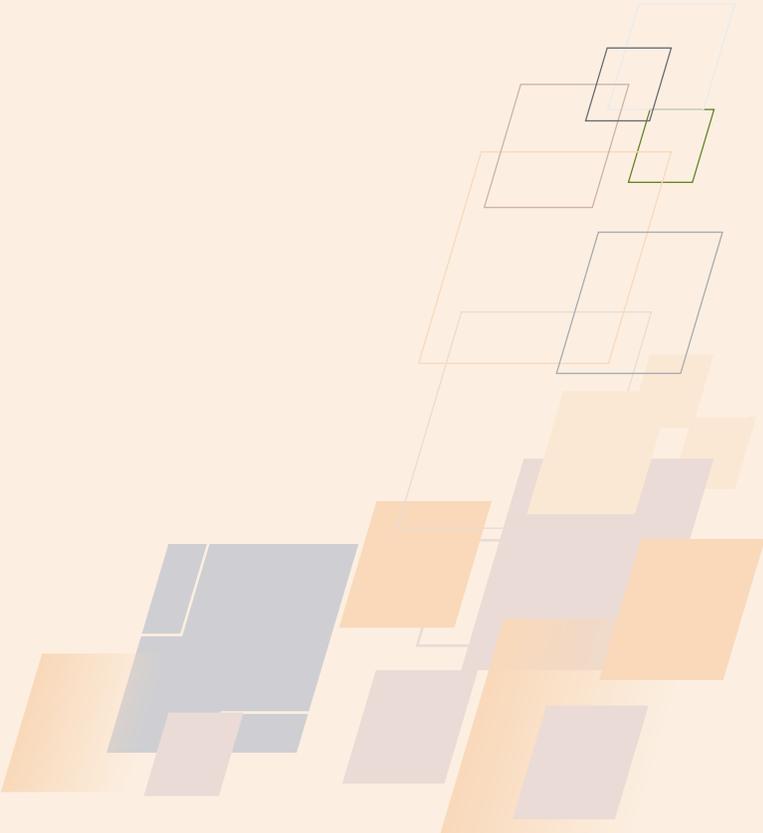
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